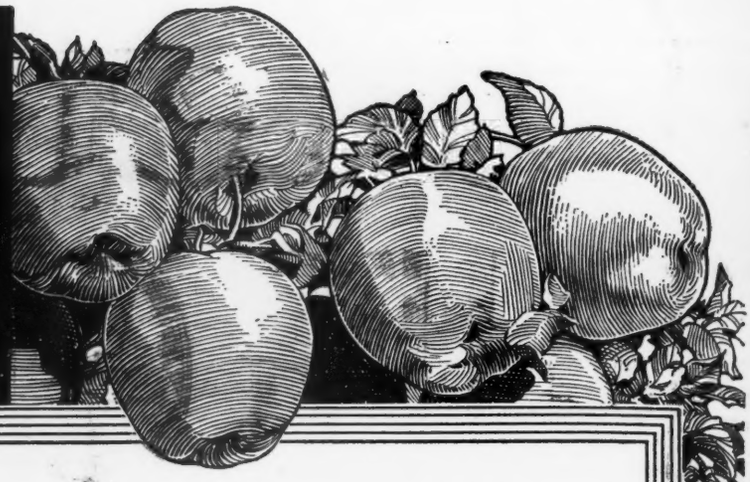
APRIL, 1935

American FRUIT GROWER

THE NATIONAL FRUIT MAGAZINE

In this issue

Lessen Your "Stung Fruit" Losses



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Please send me a copy of the new edition of "Cash Crops."

NAME _____ ADDRESS _____

1935 . . . A STILL BIGGER YEAR FOR "ASTRINGENT" LEAD!

Nation Wide News

The U.S. Weather Bureau has recently announced plans for improving the accuracy of weather forecasts, which will be of great benefit to fruit growers. With the wider use of radio and airplanes, it will be possible to make more frequent and detailed readings, resulting in a distinct forward step in the air mass analysis method of forecasting. New river gauges will also insure more accurate forecasting of floods.

▲ ▲ ▲

Another International World's Fair will open in San Diego, Calif., in May. Everything will be shown in connection with growing, distribution, machinery, trucks, refrigeration, and the like, for fruits, vegetables, nuts, etc. This will be a $15,000,000 exposition and the attendance expected will run from 8,000,000 to 10,000,000. Gates will be open for one year. San Francisco plans to conduct an exposition during 1936 and 1937, and Los Angeles from 1938 to 1939 or thereabouts.

▲ ▲ ▲

Fruit growers, who will need credit for crop production during the 1935 season, may turn in their applications now and get tentative approval for the loan. Interest on the loan, however, will not start until the money is advanced. Production credit associations are organized for permanent service, and aim to provide adequate and dependable credit for U.S. farmers.

▲ ▲ ▲

The Pacific Coast cranberry crop for 1934 was close to 25,000 barrels. This is nearly three times as large as the previous year's crop and exceeds the five-year average (1927-31) by 5844 barrels. Nationally, the 1934 cranberry crop was short, estimated at only 467,300 barrels, nearly 14 per cent below the large crop of last year, and 100,000 barrels below the five-year average.

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The Benton Harbor Fruit Market in Michigan has just made the annual report and summary of its activities during the past year. It has been a record year for the market, fruit growers having received more money for their products than in any year since the market's opening in 1930. According to figures compiled by the U.S. Market News Service, and the market-master's office, 6,909,774 packages were sold over the market

during 1934, an increase of more than 835,000 over the previous year. The estimated cash return to growers was $3,798,401.92. Buyers from 25 states came to purchase the southwestern Michigan products.

▲ ▲ ▲

The Campbell (Calif.) Packing Company last year processed large amounts of nectarines for the first time. Previously they have always been shipped east fresh or dried.

▲ ▲ ▲

Two types of emergency loans have recently been authorized by the Farm Credit Administration for the benefit of northeastern fruit growers whose orchards were damaged by storms in 1933 or the cold winter which followed. The first type of loan covers replacement of trees not to exceed $35 an acre, or 50 cents per apple or pear tree and 30 cents per peach tree. The second type of loan is for the maintenance of damaged trees in bearing peach and sweet cherry orchards. The maximum amount allowed in this second type will be $25 per acre for peach and $12 per acre for sweet cherry orchards.

▲ ▲ ▲

The Florida freeze which occurred during the early part of December has proved to be the worst in many years. While injury was most severe to the tender vegetables, fruits also suffered. Strawberry bloom was killed, thereby delaying further shipments about a month. Citrus damage has been more difficult to appraise, though it is apparent that the most serious damage has been confined to tangerines, considerably less to oranges, and still less to grapefruit.

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The California Avocado Growers' Association has opened six new eastern offices and there will be a great distribution impetus to take care of the largest crop on record. The avocado crop has increased from 129 tons in 1924 to 1793 tons in 1934, and is grown on about 8400 acres by some 2000 southern California growers. A protest has been made in Washington against avocados coming in duty-free from Cuba.

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California has taken up the new grapefruit, the pink Marsh, which is also being grown considerably in Florida, Texas and other southern states. The juice has a pink color and the fruit is supposed to ripen earlier.

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Cover photograph shows Michigan's 1934 Queen of the Blossom Festival, Miss Connie Le Garde, of Muskegon.

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THE BUNDLE OF TWIGS

OLD as it is, no fable is more applicable to fruit growers than the one in Aesop's tales about the father who called his grown sons before him and with a bundle of twigs, demonstrated that a single one was easily broken, but that the same twigs, when bound together in a bundle, resisted the efforts of even the strongest to break them.

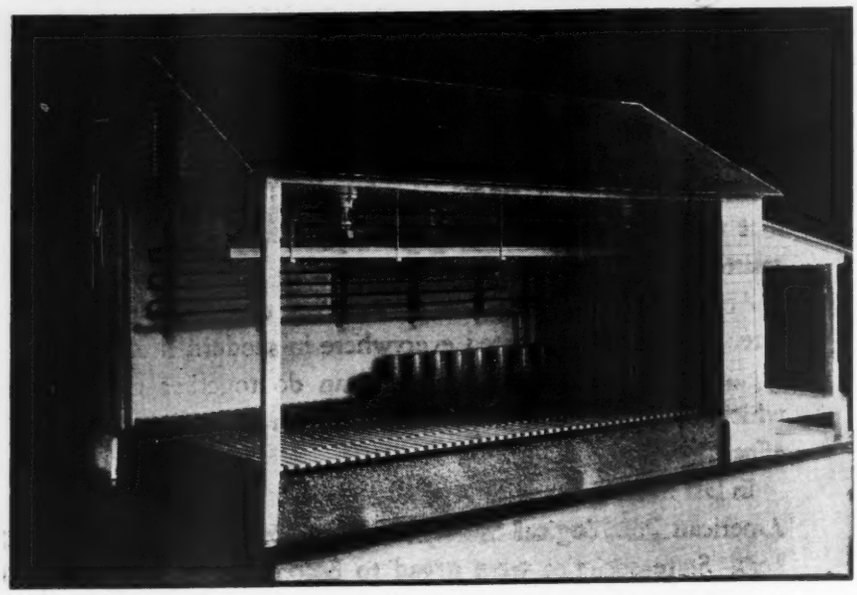
And so it is today. The phrase, "In union there is Strength," is demonstrated everywhere in modern life by organizations and societies. Men can do together that which they could not hope to accomplish by individual effort.

In last month's issue of AMERICAN FRUIT GROWER, the American Pomological Society made an appeal for members. State societies were urged to become members of the national organization. We earnestly hope that this invitation will be heeded. Fruit growers, like men in other walks of life, can accomplish mighty things when banded together. Yet fruit growers to date have not been as far-sighted as they should have been in the matter of joining and supporting their organizations. The United States Census figures show there are 141,418 fruit farms in this country. There are 36 state societies—yet their total membership numbers only something over 16,000.

Every fruit grower, for his own good, should join his state society. In turn, he should urge the state society to join the American Pomological Society. The immortal Bacon profoundly emphasized this responsibility when he said, "I hold every man a debtor to his profession, from which, as men of course do seek to receive countenance and profit, so ought they of duty to endeavor themselves by way of amends, to be a help and ornament thereunto."

Membership fees in state horticultural societies are low and AMERICAN FRUIT GROWER will be glad to arrange membership for you. Write us.

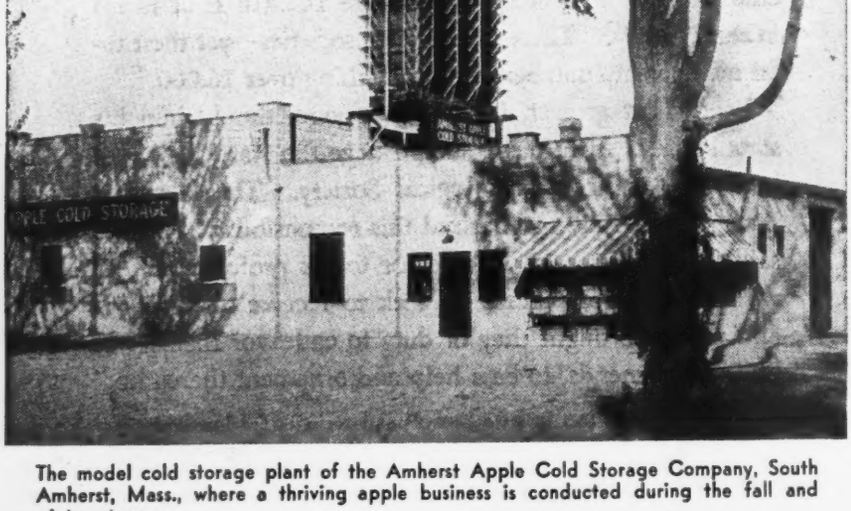
In this West Virginia cold storage plant, with a capacity of 10,000 barrels, a blower-type refrigerating unit was installed at a cost of less than $3,000.



This scale model of a small apple storage was exhibited recently at the Pennsylvania Farm Show. The storage room is 20 by 30 feet, with capacity for 2,000 bushels. Cooled by mechanical refrigeration.

TYPES OF GROWER-OWNED COLD STORAGE

Progressive fruit growers in various parts of the country are finding it "good business" to build and operate their own cold storage plants. The illustrations on these pages give some idea of the various types, sizes and costs of grower-owned cold storage.



The model cold storage plant of the Amherst Apple Cold Storage Company, South Amherst, Mass., where a thriving apple business is conducted during the fall and winter season . . . . .

. . . . . And where dancers enjoy themselves in complete comfort in the summer.

ARE YOU PLANNING

This modern cold storage building cost $3,500 to construct and has a capacity of 10,000 bushels. Owned by Philip Klenk & Sons, who operate a fruit farm of 245 acres near Grand Rapids, Mich. Built first for air storage, the owners have since equipped the plant with mechanical refrigeration and have built a second storage, 36 by 80 feet, with a capacity of 14,000 bushels.

YOUR OWN COLD STORAGE?

By DEAN HALLIDAY

THE successful fruit grower of today has learned that the technique required for profitable disposal of his crop is just as important as the technique involved in helping Nature to produce the crop. In other words, you don't make a profit in the growing of apples, the profit comes only when they are sold at the right time and at the right price. And with market conditions what they are today, cold storage, paradoxically, is often the short cut to profit. The grower who doesn't have to "dump" his crop in a glutted market, but can utilize economical cold storage and wait for his price, usually gets it.

If commercial storage is available within convenient distance and at the right rate, there is no need for a grower to build his own, although there are distinct advantages in having cold storage on the fruit farm. Thousands of fruit growers have already built cold storage plants of their own, and many other thousands are planning to do so this year.

How large a plant should be built? What will it cost? And will it pay for the investment? Specific answers to these questions would depend, of course, upon careful investigation of the individual grower's setup and problems. The per bushel cost of constructing cold storage decreases with the size of the building. Thus a 40,000 or 50,000 bushel plant costs less per bushel to construct than a 10,000 bushel plant. And there is a point of capacity (other local factors also being considered) where, with average crops less than that capacity point, it would not be "good business" to invest in the construction of one's own storage plant. With an average crop of less than 10,000 bushels and commercial cold storage facilities nearby, investment in a storage plant

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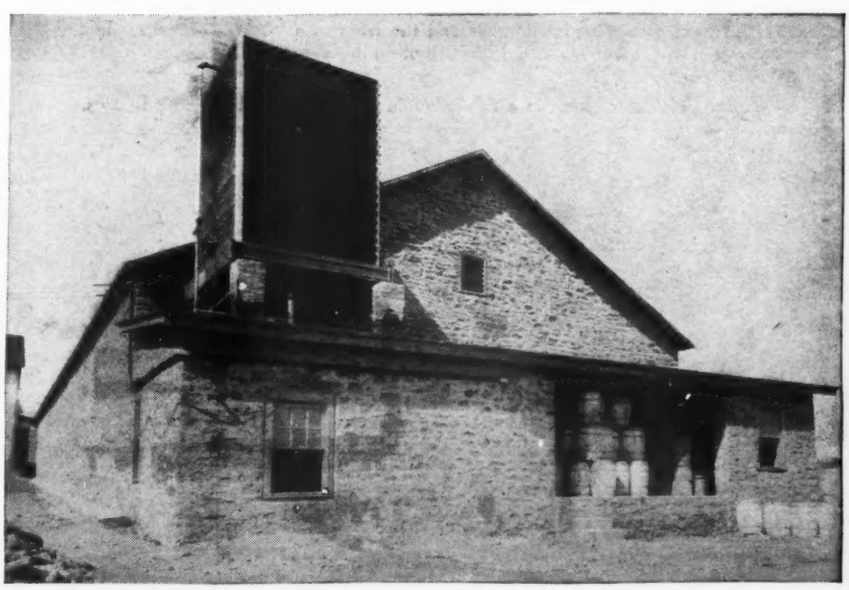
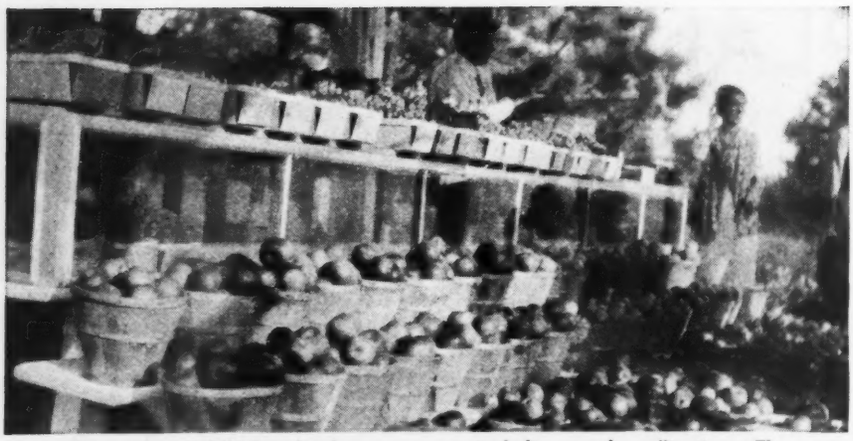


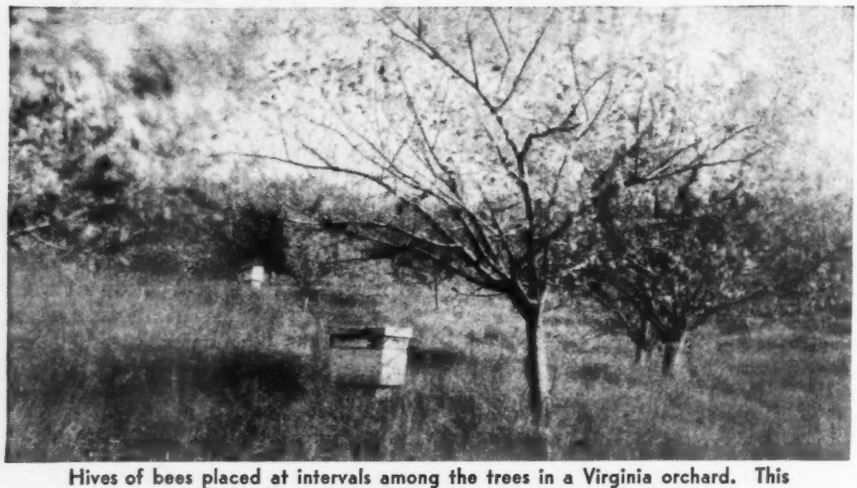
Masonry is preferred construction for cold storage. The Hillcrest Farms plant at West Virginia has stone walls 18 inches thick. The storage is 103 by 48 feet by 12 feet high, with capacity for 20,000 bushels. Mechanical refrigeration.



The results of skillful orchard management, including ample pollination. The roadside stand of Falls Church Orchards, Fairfax County, Virginia, with the proprietors, Mr. and Mrs. O. H. Nigh, in charge.

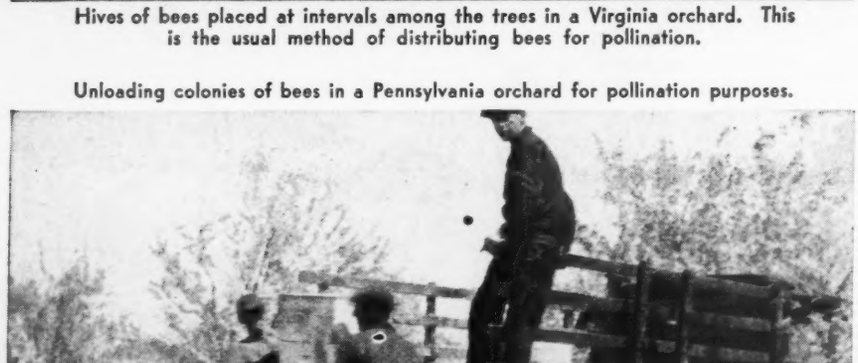
SHALL I KEEP BEES OR HIRE THEM?

By WALTER H. HULL



Hives of bees placed at intervals among the trees in a Virginia orchard. This is the usual method of distributing bees for pollination.

Unloading colonies of bees in a Pennsylvania orchard for pollination purposes.



BEES are recognized as beneficial to good fruit growing. Often they are necessary to produce a full crop. Their activity insures full pollination and it pays to have enough of them close at hand for that purpose. The orchardist may own the bees himself, or, since they are needed only while the trees are in bloom, he may hire them for a few days during the bloom.

Let us consider first the ownership method. If you own the bees they will, presumably, make you some honey, which can be credited against the cost of their upkeep and care. Whether it will cover that item, or whether the net cost of their pollination service will be greater or less than if you hired them, will depend upon how well you manage them, and of course upon your locality. Some localities are shy on nectar-producing flora.

The first cost of bees with modern equipment runs from $10 to $20 per stand for a properly equipped apiary, with perhaps $15 as a fair average. This includes actual cost of bees, hives with their inside furniture, including frames and the foundation necessary for securing serviceable combs, supers for surplus honey, and storage room and equipment for handling the crop. Skimping on the original investment will increase the depreciation.

Investment in bees is fairly secure in a good locality and under competent management. In a poor locality where bees do not make enough honey to keep them in a thriving condition, or are under incompetent management, it would be hard to conceive an investment more precarious than this. Even a little carelessness or neglect may result in heavy loss. At certain seasons wax moths will destroy valuable combs in a few days if given a chance. There is also the dreaded *Bacillus larvae* to guard against—a disease that attacks young bees in the larval stage and which, if neglected, will soon spread through the whole apiary.

In estimating prospective returns, the novice is inclined to make two bad errors. First, his crop estimates are too high. If he knows of someone who has obtained 150 pounds from a single colony he is apt to allow, say, 50 per cent reduction for safety, and count 75 pounds per colony as a conservative estimate. Except under the most expert management, there is always a wide variation in the returns from various hives. In a locality that is good for an average of not more than 40 pounds per colony, there may easily be some that

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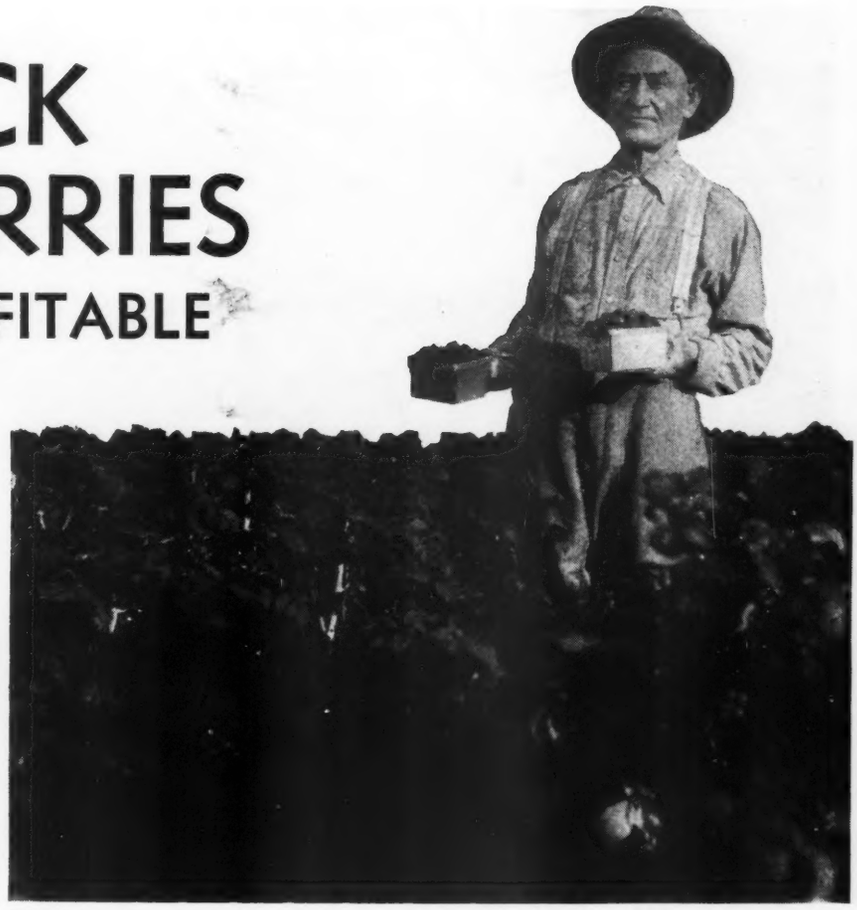
BLACK RASPBERRIES PROVE PROFITABLE

By T. J. TALBERT
University of Missouri



W. W. Watson, of Columbia, Mo., in his raspberry patch at harvest time carrying two well-filled boxes of high quality berries.

IN recent years fruit crop producers have often been faced with this question: Will any kind of production pay? W. W. Watson, a 72-year-old farmer, living in Boone County, near Columbia, Mo., found that in 1931 and 1932 blackcap raspberries paid handsome profits. Mr. Watson's planting of about one-eighth of an acre yielded him an income of $50 the year following planting. For the second year when the canes came into full bearing, careful accounts show that berries to the value of about $140 were sold upon the markets of Columbia, a city of about 15,000 inhabitants.

Mr. Watson owns and operates a 40-acre farm located about seven miles from Columbia near highway No. 63. Corn, wheat, hogs, and cattle failing to bring him satisfactory returns as they had in the past, he turned his attention to raspberry culture. He had never grown the crop before, but he obtained as much information as possible upon raspberry culture from the Missouri Agricultural Experiment Station at Columbia. Armed with this information he put into practice as many of the suggestions as practicable under his conditions. The fact that raspberries had been growing for several years in a neglected blackberry patch made it possible for Mr. Watson to secure his plants without cost. Care was used in the selection of young, healthy, vigorous plants in the spring of 1930.

The planting plot selected was 86 feet long and 68 feet wide, amounting to about one-eighth of an acre. In the early spring five loads of well-rotted barnyard manure were spread on the plot and the soil was plowed to a depth of seven to eight inches. After plowing, the soil was thoroughly disked and harrowed.

Rows were established five feet apart and the plants were set in the row at a distance of about two and one-half feet apart. Following the setting of the plants, two or three cultivations were made with a plow and horse. The growth of the canes was vigorous, and soon they filled the middles between the rows to such an extent that plowing had to be abandoned. As a result, the cultivation was continued with a hoe at regular intervals following rains. In all, two plowings and five hoeings were given the plants during the first season. The thorough cultivations early in the season supplemented by later shallow cultivations with the hoe laid the foundation for the crop two years later. Even in spite of the severe drought of July and August, the canes made an unusually good growth.

As often as he cultivated, this was not all that Mr. Watson did. He found from the bulletins that he read and studied that some pruning, consisting of cutting and pinching of the tops of the young, vigorous canes, was helpful. From the station publications he found that pruned shoots produced more lateral branches than unpruned ones and that shortening of the laterals to a length of eight to 12 inches tended to cause the production of well-formed, large berries and prevented the growth of long, weak canes that bend or break down. Watson's raspberries were planted so close together in the row, however, that it was necessary for him to do more heading-in and shearing than recommended. This work required a great deal of time. Watson now believes that for vigorous Cumberland raspberries such as his, growers should plant in rows seven to eight feet apart and in the row three to four feet apart. Such plantings would permit the use of horse cultivators and thus reduce the amount of hoeing and cut down the cost of production materially.

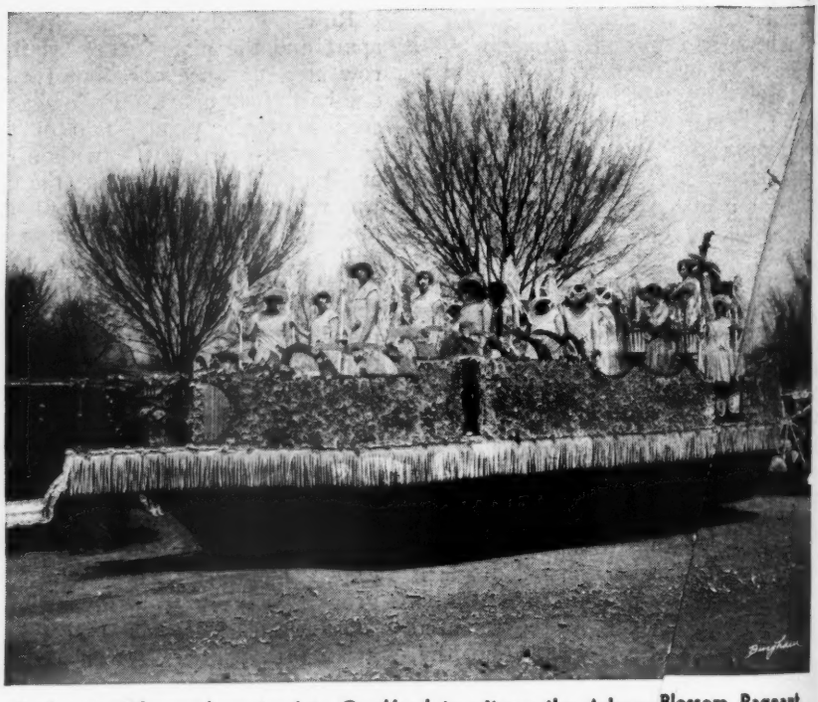
Producers of raspberries should not expect a paying crop the year following planting, as the plants rarely produce a sufficient cane growth or bearing wood to warrant anything like profitable production. Watson's timely care and attention demonstrates, however, very clearly that much more than the average can be produced where the best culture is employed.

As injury from insect pests and plant diseases was not noticeable, sprays were not required. The good culture, however, undoubtedly did much to hold in check some of the in-

(Continued on page 26)

A Blossom Queen has ruled over eleven annual Shenandoah Blossom Festivals, with Winchester, Va., as her capital.

In Wenatchee, Wash., the sixteenth annual Blossom Fete will be held this spring.



Each spring thousands motor into Ozarkland to witness the Arkansas Blossom Pageant.

WINTER IS DEAD! LONG LIVE THE BLOSSOM QUEENS!

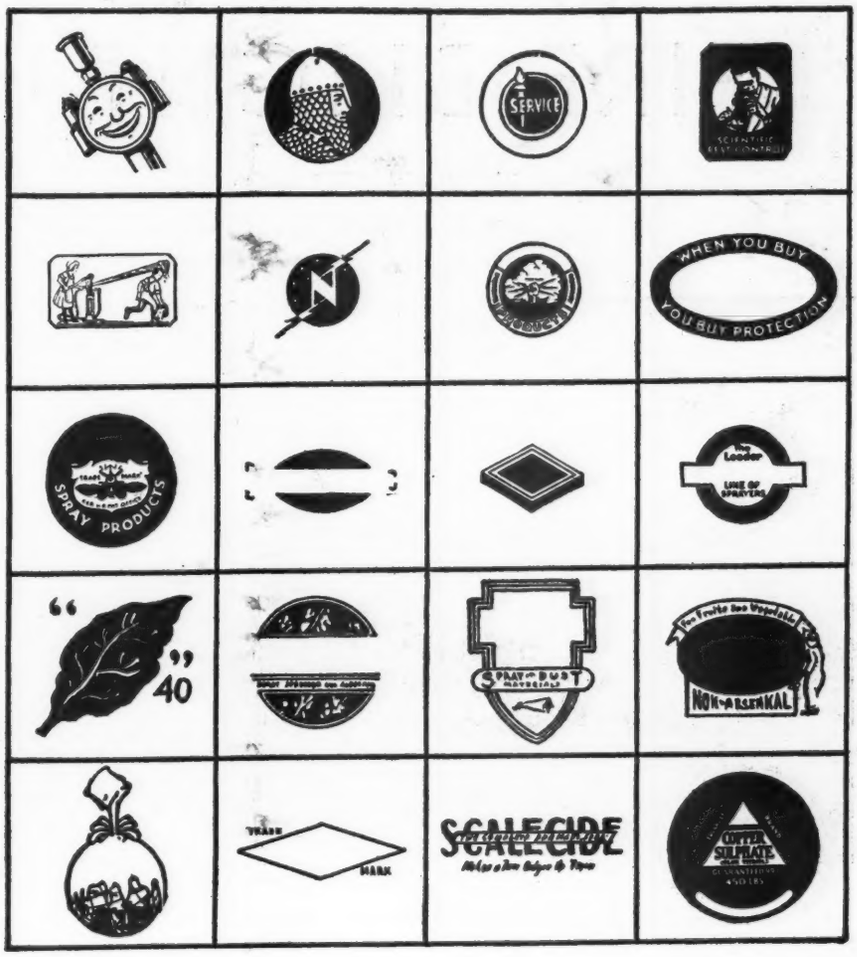
As spring brings apple blossoms again regal queens prepare to rule over the Blossom Festivals held in various parts of the country. Illustrated above are three of the Blossom Queens who held the sceptre last year. Top, the Queen and her court of the Shenandoah Valley Blossom Festival. Lower left, Her Royal Highness and attendants at the Washington Festival. Lower right, the Queen's float at the Arkansas Festival.

WHOSE TRADE-MARKS ARE THESE?

A GAME OF GUESS NOW

BUT NOT AFTER YOU HAVE STUDIED THE

JUNE DIRECTORY EDITION



As a fruit grower, buying this and buying that, season after season, you probably pride yourself on knowing the trade-marks of products indispensable in your field. But do you really know them?

You think you do, of course, yet when you look at the group of trade-marks reproduced on this page, how many can you actually name from memory? The identifying names have been removed in order to make a real test of your memory. Some, of course, you will be able to identify by trade name, but even with the trade name in mind, can you tell the names of the concerns to whom these trade-marks belong?

This is more than a memory test. It is intended also to bring home to you how much fruit growers really need a Buyer's Guide—a real handbook compiled solely for the use of fruit growers.

That's just what the Directory Number of AMERICAN FRUIT GROWER will be—an organized Buyer's Guide and index to the fruit industry—your industry.

Published as the June issue of AMERICAN FRUIT GROWER, the Directory Number will contain classified lists of products, manufacturers and suppliers for every phase and season of fruit growing. It will also contain a Who's Who in Pomology, a complete list of U. S. Plant Patents, the Genealogy of Fruit Varieties, a complete listing of catalogs and special booklets available to readers, as well as a directory of trade names and trade-marks.

This will be the first time that a Who's Who of What to Buy and Where has been available in the fruit field. It is something you have always wanted and needed—and it will be an issue of AMERICAN FRUIT GROWER that you will save for handy reference again and again throughout your working year.

The Directory Number will be out in June. Watch for it—and in order not to miss this all-important issue, be sure that your subscription to AMERICAN FRUIT GROWER does not expire before then. If your subscription has expired, or does expire before June, renew it at once and be sure of getting your copy of the Directory Number.

How Often Have You Needed a Buyer's Guide?

Remember trying to recall the name of a certain product or concern? Remember trying to find an old letter or envelope containing the address of the firm to whom you wanted to send a Rush Order? Again and again you have needed a Buyer Guide, compiled exclusively for you as a fruit grower. Knowing this need, AMERICAN FRUIT GROWER is preparing the first Directory of the Fruit Industry. It will come to you in June. Because we don't want to overlook anything that should go into the Directory Number, won't you write us now, telling what you'd like to see in such an issue, and how much and how often you have needed this kind of information?

MODERN CONTROL OF FIRE BLIGHT

By EARL M. HILDEBRAND

Cornell University

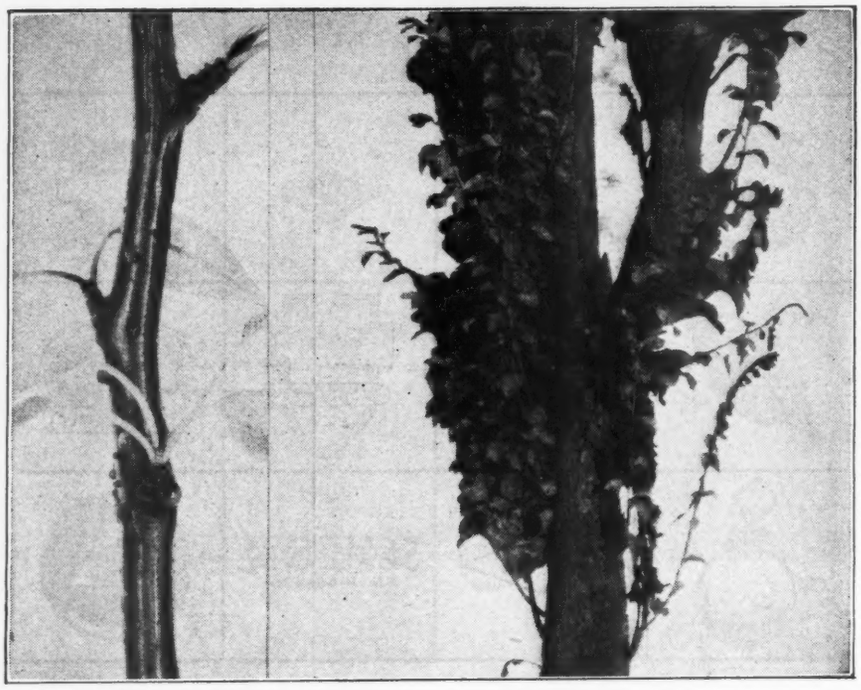


Fig. 1. Drops of ooze on a Bartlett pear shoot containing millions of bacteria.

Fig. 2. The lower part of a pear tree from which the suckers have not been removed for several seasons. Note the blighted suckers.

THE fire blight disease has been a subject of interest and concern to American fruit growers for well over a century. It is still the most dreaded disease of pome fruits because it does not yield to ordinary control measures. Control is made further difficult because fire blight occurs sporadically. The principal control measure used is based on the eradication of the bacteria by the removal of the sources of inoculum, such as cankers. The obvious weakness of this approach to adequate disease control is that it does not prevent infections unless the eradication program could be 100 per cent efficient. In the April, 1934, issue of this magazine appeared a discussion of certain standard practices which have been developed and are now in common use in blight control. The present article is a continuation of that discussion.

Apple trees severely affected with blossom and twig blight usually recover if left alone. This does not apply very often to pear trees because their main framework is more commonly invaded. If the cankers in the main limbs of susceptible trees are removed and treated so as to save the framework, neglect of the other less critical cutting may be permissible in extreme cases.

A systematic inspection of the orchard at short intervals beginning immediately after petal fall and continuing for several weeks thereafter with the prompt removal of the earliest beginnings of blight will amply repay growers. The employment of full time operators in blight control has been practiced by the larger growers in California with considerable success. One skilled man with extra help during the rush periods may ordinarily take care of 50 acres of pears.

Of great importance is the removal of all healthy as well as diseased suckers from the trunk and main limbs of the tree. (Fig. 2) This should be done early in the season, before new infections have appeared, when they may be rubbed off easily, using a pair of leather gloves. If allowed to become woody, more labor will be involved, as it will be necessary to cut them off. When cuts are made, the tool must be disinfected. It should be evident at once why suckers are dangerous. It takes but a short time for the bacteria to pass through young succulent tissue on into the trunk or roots endangering the life of the tree by the formation of a canker. This practice should not stop with the removal of suckers but effort should be made to free the large branches of blossom spurs which, if infected later, may also result in body cankers.

The destruction of blighted material removed in the pruning operations is of uncertain value in fire blight control. It is recommended, however, because it is a good sanitary measure and good orchard practice.

Wounds made during the growing season along with the tools should be disinfected with a good bactericide. One of the best preparations to use is Reimer's solution. It consists of one quart of water, 4 tablets cyanide of mercury (or $\frac{1}{16}$ ounce of the crystals), and 4 tablets bichloride of mercury (or $\frac{1}{16}$ ounce of the crystals). This would be the same as one part of each of the chemicals in 500 parts of water. Some small scale growers have been successful in using only the bichloride of mercury on their tools. The addition of cyanide of mercury to the bichloride of mercury preparation greatly improves its effectiveness on wounds and is much to be preferred. The mercury-glycerine disinfectant which has recently come into prominence appears to penetrate better and protect the wounds longer than where no glycerine is used This preparation is the same as Reimer's solution except that glycerine is substituted for three-fourths of the water.

To prepare the disinfectant, put the water or water and glycerine into an enameled dish, or other noncorroding container, and heat to a temperature of about 170° F. Remove from the fire and add the cyanide of mercury. Stir with a clean wood stick or enameled spoon until dissolved. Then add the bichloride of mercury and again stir until dissolved. Cool and pour liquid solution into a glass bottle, stopper tightly, and mark "Poison." Except when glycerine is used, heating may be omitted. However, the time saved in dissolving the chemicals in hot water is well worth considering.

Canker control methods are now being developed which are based on the application of chemical paints to the surface of the bark. The successful application of surface treatments

(Continued on page 23)

AMERICAN POMOLOGY

A Page Conducted in the Interests of the American Pomological Society

WE hope that the annual report of the A.P.S. will be ready to mail to our membership by the time this issue of AMERICAN FRUIT GROWER reaches our readers. Memberships have been coming in quite regularly but the number should be much greater. These are difficult days for many organizations, but the A.P.S. is taking on new responsibilities and is rendering larger services each year. Larger membership is needed to strengthen the work of this, the oldest national organization in America.

The code of nomenclature was amended at the Grand Rapids meeting. Dr. M. J. Dorsey is chairman of the committee, and we will have a report from this committee which will be published soon in this publication. Dr. Dorsey is a widely known authority and has devoted much time to the question of naming new fruit varieties, with particular reference to the naming of bud sports. A system of registering names of new fruits is being discussed, and plans are being developed to make it possible for the names of new fruits to be registered in an official way. Thereby confusion due to duplication of names may in a measure be eliminated.

Horticultural Outlook for 1935

There came to my desk a few weeks ago U.S.D.A. Miscellaneous Publication No. 215 with the title, "The Agricultural Outlook for 1935," prepared by the staff of the Bureau of Agricultural Economics, Washington, D.C. In it are discussed "a summary of facts bearing upon the present situation and probable developments in agricultural production and marketing in 1935." Some 31 pages are devoted to horticultural crops. Every fruit grower could well afford to secure this special report, as it summarizes trends in production in a most informative manner.

Apple growers may find some encouragement in this outlook report. It is believed that with average conditions prevailing "production of apples during the next five years probably will be equal to or may exceed the somewhat lower-than-average production of the last five years. However, because of recent excessive damage from drought and cold weather, and continued deterioration and removal of farm and generally unprofitable commercial orchards, accompanied by very little planting of trees during the last five years, moderate plantings will be necessary to maintain the present volume of production 10 to 15 years from now." An unfavorable situation is that exporters of apples may expect to meet increased competition in foreign markets.

The extent of the drought and winter damage to fruit trees is not yet fully known, but "it appears that from 3,000,000 to 3,500,000 apple trees" have been removed from production. Most significant from a long-time viewpoint is the fact that from 1910 to 1930 a total of 100,000,000 apple trees have been removed or lost. This represents a loss of 46 per cent, and it is estimated that since 1930 a further decrease of at least 18,000,000 trees has occurred. "During the three census years 1920, 1925 and 1930, apple trees of bearing age constituted about 75 per cent of all apple trees" and that since 1933-34 the proportion of bearing trees has reached 80 per cent.

A.P.S. Board Meeting

A meeting of the Board of Managers was held at Urbana, Ill., Saturday, March 23. Several matters of importance were given careful consideration.

Invitations from the Connecticut Pomological Society and the Hartford Chamber of Commerce to hold the 1935 meeting in Hartford with possible co-operation from adjoining states were presented and favorably received. The officers were instructed to proceed with negotiations. A fruit congress on a regional scale with a fruit show of like dimensions and possibly reviving the famous New England Fruit Show of a few years ago could accomplish great good in the present apple situation. It is several years since the A.P.S. held an important meeting in New England and it was felt that if suitable arrangements could be made, the invitations would probably be accepted. An announcement may be expected next month.

A short special meeting was authorized to be held in St. Louis during New Year's week with a view to synchronizing certain work of the American Society for Horticultural Science and the A.P.S.

A movement to erect a suitable monument on the grave of Johnny Appleseed (John Chapman), who was buried near Fort Wayne, Ind., has raised a question as to its exact location. Requests were presented by the Indiana Horticultural Society, the President of the Allen County-Fort Wayne Historical Society, the Three Rivers Forum, and other interested organizations and individuals, asking the A.P.S. to appoint a commission to investigate the matter. Because of the national character of the man involved, it was deemed a proper subject for attention by the organization and the President was authorized to appoint a commission competent to make an authoritative report.

The service work of the organization was reviewed. Truck transportation regulations, proposed Foods and Drugs legislation affecting fruits, spray residue control, and possible licensing of orchard operators were discussed, while suitable studies and actions were directed.—B. S. PICKETT.

These figures should be of interest to every fruit grower. It looks like there may be some good years ahead for those fruit growers who have prime orchards.

Among Our Life Members

William B. Alwood, Greenwood, Va., in a most interesting and well illustrated paper published in the Proceedings of the Thirty-ninth Annual Meeting of the Virginia State Horticultural Society, describes very clearly soil preparation, planting, pruning, spraying and fertilization of grapes. Mr. Alwood says in the opening paragraph, "I have put together a brief outline which I hope will cover the more practical questions a beginner might wish to ask."

New Bulletins

Berry growers will be interested in two new bulletins relating to the growing of brambles. Drs. A. S. Colby, H. W. Anderson and W. P. Flint are joint authors of a comprehensive and well illustrated bulletin by the title of "Bramble Fruits." It is published as Circular 427 by the University of Illinois, Urbana. All phases of culture, varieties, diseases and insects are well described.

Another report is "Studies of the Response of the Latham Raspberry to Pruning Treatment," written by Dr. W. G. Brierley, University Farm, St. Paul, Minn. This bulletin deals with an experiment designed to determine what happens when the Latham raspberry is pruned in different ways.

In a new bulletin to be published soon by Messrs. Plagge, Maney and Pickett of the Iowa Agricultural Experiment Station, the functional or physiological diseases of the apple in storage are fully described and illustrated. The diseases investigated include apple scald, the different kinds of breakdown, Jonathan spot, bitter pit, brownheart, etc. The object of the publication is to help the fruit grower and the fruit dealer, as well as the consumer, to clearly differentiate between these storage diseases.

The investigations, which have been in progress for 10 years, give the characteristic symptoms of the diseases, the conditions which influence their development, and the best methods of control. The results have shown that all varieties of apples can be satisfactorily stored at 35° or 36° F. and that most of the serious physiological disorders above mentioned are prevented when the fruit is stored at this temperature range.

H. L. Lantz

HEARD AT THE CONVENTIONS

By JOHN T. BREGGER

The location of the fertilizer application with respect to the trunk is relatively unimportant, just so the plant food elements reach a part of the active root system of the tree.

When planting fruit trees on soils where drainage is not the best, Dr. A. J. Heinicke of Cornell University advises shallow planting and plowing towards the tree rows.

Close planting of orchard trees has its greatest advantages in reducing the bushel of growing fruit, in shading the ground, and in preventing a certain amount of wind damage. In dry areas or during drought years, closely planted trees are the first to suffer.

A complete crop failure would solve the codling moth problem, but who wants that?

A study by the Ohio Experiment Station shows that filler trees to be profitable must be early, heavy and regular producers, bearing fruit at a high value per pound. The tree must also be of medium size and produce by the end of its twelfth year 600 pounds of apples. It costs about $9 to grow a filler apple tree to the age of 12.

Owing to the dry summer of 1934, there is an accumulation of more than the usual amount of nitrate nitrogen in the soil of drought areas.

According to Dr. Laurenz Greene, horticulturist of Purdue University, a heavy set of fruit is usually followed by a heavier "June drop" than with a lighter set. The set of fruit also decreases as the percentage of blossoming spurs increases.

Little or no injury has resulted from continued yearly applications of oil in fruit tree sprays, except where too strong an oil has been used. Three applications of summer oil have shown absolutely no injury.

The Wagener apple is again on the increase in Michigan orchards. It was formerly one of the most popular varieties for use as fillers, as the trees bore early and remained somewhat dwarf in their growth.

Strawberry plants should not be planted too close together. Federal experimenters have found that yields may be significantly increased by increasing the planting distance. The difference becomes even more striking during seasons of low rainfall.

Basal buds are more hardy in the peach than tip buds. Bud killing is dependent more on the growing conditions of the previous year than on the type of fertilizer used, according to observations of Illinois Experiment Station workers.

STATE HORTICULTURAL NEWS

Horticultural News From the Tall Corn State

DATES for the 70th annual convention of the Iowa State Horticultural Society, and several of its affiliated societies, were recently set by the Board of Directors. The convention will be held at Ames, Iowa, November 21, 22 and 23, 1935, in connection with the Little Mid-West Student Horticultural Exposition, to be held at Ames on November 22 to 24, 1935.

No sprays are being recommended in Iowa on fruit trees this year until time for the calyx spray, unless there is an infestation of scale. Due to the hot, dry weather of the past year, it was virtually impossible for scab spores to live over, and consequently the chances are very remote that there will be any scab present, even if a wet spring is experienced in Iowa. Scab, of course, may develop late in the summer or fall.

Prospects for an apple crop are seemingly very bright. Fruit buds seem to be plentiful and healthy at the present time, as no winter injury has occurred yet that is likely to prove fatal to any great number. However, fruit buds may have been weakened by last spring and summer's drought to such an extent that they will not set fruit this year. However, Iowa fruit growers are hopeful and are rather optimistic.

G. W. BARBER, *Asst. Sec'y*,
Des Moines.

Ten High Lights from West Virginia's Annual Meeting

TEN especially lustrous pearls of orchard wisdom dropped at the West Virginia Horticultural Society's 42nd annual meeting, held February 13 and 14 at Martinsburg.

1. Twenty-five dollars per acre per year invested in irrigation for orchards whose soil is less than three feet deep will undoubtedly pay excellently in bigger, better-finished fruit; for late fall and winter varieties; not for summer varieties . . . . Only a little, comparatively, can be done to change a soil's water-holding ability.—DR. J. R. MAGNESS, U.S.D.A., WASHINGTON.

2. Nicotine is the closest approach to a satisfactory substitute for lead arsenate yet in sight. Present control methods for codling moth are inadequate.—DR. B A. PORTER AND EDWIN GOULD, U.S.D.A., WASHINGTON.

3. We are recommending summer oils for the three middle sprays for codling moth.—PATHOLOGIST E. C. SHERWOOD, MORGANTOWN, W. VA.

4. Apples will stand 100° F. for three minutes, 110° F. for one minute, in washing, without injury. This is often the answer in hard residue cases. Growers will save a lot of worry and money if they decide on "no half-way results and no uncertain methods."—DR. D. F. FISHER, U.S.D.A., WASHINGTON.

5. Don't interplant peaches and apples. Plant peaches 24 feet apart each way. Right now peaches may be the best bet, financially.—DR. H. W. SKINNEK, CHAMBERSBURG, PA.

6. Cold storage for 14,550 barrels of apples over four months cost 1.27 cents per bushel in my orchard cold storage, blower type; allowed pre-cooling by midnight of the day apples were picked; saved $100 per car on storage charges; allowed picking several days later, with better finished fruit; allows me to sell from storage in any package buyer wishes, instead of having to sell in packages packed earlier and rolled to distant storage.—L. PORTER MILLER, PAW PAW, W. VA.

7. The Diesel oil engine should be investigated as power-supply by anyone building an orchard cold storage.—H. E. HERSHEY, HAMBURG, PA.

8. Long ago we learned that it is easier to grow fruit than to market it . . . . The power of the U. S. Government is the only thing that will bring to the citrus industry of Florida a positive united action.—HOWARD PHILLIPS, ORLANDO, FLA.

9. The Mid-West, a big field for the finer packs of Virginia apples, scarcely knows we grow apples. We are sitting here with the best flavored apples that are grown, but too bashful to tell anyone about it.—W. S. CAMPFIELD, STAUNTON, VA.

10. We want none of Joe Eastman's plan to put ALL transportation under Interstate Commerce Commission. That would mean ALL freight rates jacked up to the traffic-throttling high levels of railroad rates; would mean the same rank rates discrimination that is knocking Shenandoah Valley apples out of their natural markets now. No, Congress. If you want to whip the rest of the family, all right. But excuse us from this particular whipping. We don't want to be shut out of our remaining markets by too-high freight rates.—Resolutions No. 2 and 9.

CARROLL R. MILLER, *Sec'y*,
Martinsburg.

Maine State News

JUST as Will Rogers has ventilated "the climate" of California by humorous broadcast mention of rainy-season conditions, so also have we in the northeast sent abroad, through the columns of AMERICAN FRUIT GROWER, word as to the devastating effect of our severest winter on apple trees of such relatively tender varieties as Baldwin, Gravenstein and Rhode Island Greening.

But we can thank our climate, perhaps, for the comfort we get in not having to launder our apples before sending them to market. Yet possibly our forbears could be blamed for the whole nasty business of spray-residue legislation, and all on account of the custom of exporting apples in flour barrels, which was prevalent in earlier years.

The Western Maine Fruit Growers' Convention was again held in Auburn, February 14 and 15. This is the most virile of our annual gatherings of orchardists, and the interest and good attendance at this year's meeting was just another manifestation of the perennial enthusiasm and resourcefulness with which fruit men discuss old problems and meet new situations.

On the first day R. N. Atherton and others talked on the reorganization of the Maine Fruit Growers' Exchange, Director A. L. Deering presented certificates to the 1934 winners of membership in the 90 Percent Clean Apple Club, and winter injury was discussed by Dr. H. B. Tukey of New York and by Merle T. Hilborn of Orono. On the second day Dr. F. H. Lathrop of the Maine station emphasized the place of orchard sanitation in the control of apple insects, and

MEET THESE PRESIDENTS OF STATE SOCIETIES

Byron T. Roberts
New Jersey

R. P. Kimmel
Nebraska

Robert Smith
Delaware

H. W. Hathaway
Rhode Island

F. X. Wallner
South Dakota

Fulton W. Allen
Maryland

Dr. Tukey traced in a most interesting and instructive manner the development of fruit from pollen grain and egg cell to maturity.

Future exhibitions in Maine are likely to be profoundly affected by the recommendation of a committee which voted in favor of discontinuing the particular kind of Farm Products Shows which have been held in November and of substituting a three-day meeting at Lewiston in February with more emphasis on educational and trades exhibits.

An all-day meeting for fruit growers was held on Thursday, March 28, at the University as a feature of the annual Farm and Home Week.

J. H. WARING,
Orono.

Quaker State News

HORTICULTURAL Week at The Pennsylvania State College, formerly held in the winter, will be divided up into three separate meetings this year. The pomology section will meet at State College for a two-day program on July 29 and 30. Following this, the summer tour of the State horticultural association will begin. The itinerary, to be announced later, will probably include a visit to the Geneva, N. Y., Agricultural Experiment Station; a visit to the Rochester-Lake Ontario Shore district; then possibly over to the Vineland, Ontario, area. A night or two may be spent at Niagara Falls.

Peach Bud Situation

Forecasting the State's peach crop this far in advance of the season is merely a guess, although useful to some extent.

Temperatures as low as 24 degrees below zero were reported from part of southern Pennsylvania. Some orchards, especially those on sites inclined to be frosty, show considerable bud injury. Lehigh county in eastern Pennsylvania reports much bud injury. In general, nearly a full crop could still be produced.

A factor of unknown extent and importance is the appearance in certain peach orchards of severe winter injury resulting from last winter, not this season. Several large peach orchards in southern Pennsylvania are showing many dead or dying trees. We had expected this condition to be manifested for several years after last winter, and it is coming.

The 1935 Proceedings

The Proceedings of the 1935 Harrisburg meeting were sent out to all paid-up members on March 12. If you fail to receive yours and your dues are paid, please notify R. H. Sudds, State College. If you are not paid up, $2.00 will square you.

R. H. SUDDS, *Sec'y*,
State College

Minn. Fruit Display Short

THE annual meeting of the State Horticultural Society was held in November at St. Paul. As anticipated, the fruit display was short because of the unfavorable weather conditions which prevailed during blossoming season.

The following officers were elected for the year: President, Alfred Swanson, Red Wing; vice president, T. L. Aamodt, St. Paul; secretary-treasurer, R. S. Mackintosh, St. Paul; and two board members, F. D. Turner, Red Wing, and J. D. Winter, St. Paul.

R. S. MACKINTOSH, *Sec'y*,
St. Paul.

Suggestions to Beginners in Nut Growing

THE CONSIDERABLE number of inquiries concerning the growing of nuts which have been received by the writer the past winter suggests the advisability of addressing a few remarks to the beginner in nut growing.

It should be understood that commercial nut plantings in the North are still highly speculative. There is, however, a place for a few nut trees on every farm. A few trees of good varieties, well cared for, will supply a variety of nuts for home use and a few for sale. Grafted trees in most cases will bear as early or earlier than young fruit trees, and often as reliably.

Nut trees are very suitable for odd corners of land that are too rough for cultivation, or they may be used for shade trees near farm buildings or along the highway. If set in such locations, they must receive good care or they will fail.

Nut trees as received from the nursery are disappointing to the uninitiated. The long, clubby tap root with very few finer roots is wholly unlike the root systems of a fruit tree. The trees when set also do not start off with the pep of a young fruit tree.

The trees when received should be carefully heeled in in a moist place until planting time. Set them slightly deeper than they stood in the nursery, pack good surface soil firmly around the roots, water well, and if possible mulch the ground heavily to conserve moisture and keep down weed growth. If drought threatens, water the trees freely. Use no fertilizers the first year.

While the trees are young, keep down weeds if possible, either by cultivation or mulching. Where weeds and grass are allowed to grow, it is advisable to cut them twice during the season and pile them under the trees as a mulch. This should be supplemented by the use of a nitrogenous fertilizer. Nut trees will respond to good care as well as fruit trees. However, it should be emphasized: **Do not expect too much the first year.**

Space does not permit variety recommendations but a suggestion as to the kinds of nuts suitable for the North may be of interest: Black walnuts, Persian or English walnuts, Japanese walnuts and heart-nuts, butternuts, hickories, northern pecans, filberts and oriental blight resistant chestnuts. Not all are available in named varieties, nor are all adapted to all parts of the North. Further information may be found in Cornell Bulletin 573 which may be had from G. L. Slate, secretary, Northern Nut Growers' Association, Geneva, N.Y. A list of nurseries selling grafted named varieties of nut trees is also available from the secretary for a stamp.

J. A. Neilson Dies

PROF. JAMES A. NEILSON, specialist in nut culture at the Michigan State College, East Lansing, Mich., died February 11, 1935. Prof. Neilson was born in Ontario in 1880 and educated at the University of Toronto and the Iowa State College. Prior to going to Michigan he was an extension head with the Ontario Department of Agriculture, later going to the University of Manitoba in the same capacity. W. K. Kellogg of Battle Creek, Mich., brought Prof. Neilson to his farm as a research worker in nut culture. He later became attached to the Michigan State College as a nut specialist. He was an active and enthusiastic member of the Northern Nut Growers' Association, its president for one year, 1930-31, and a member of its board of directors at the time of his death.

Prof. Neilson was particularly active in searching out and bringing to notice new and superior nut trees. He also developed the paraffin method of protecting newly transplanted trees and shrubs. His energy and enthusiasm will be greatly missed in the field of nut culture.

H. A. Cardinell of the Department of Horticulture, Michigan State College, will take over the work with nuts in Michigan.

G. L. SLATE, *Sec'y,*
Geneva, N.Y.

Can You Set An Orchard For 2½ Cents A Tree?

THIS is the cost of setting Block No. 1 of Orchard No. 1 on the Davis Farms at Weston, Mo. The method employed was somewhat unusual in that it provided for the use of very little labor. Two corn-planter check-row wires were marked at 40-foot intervals. One of these wires was stretched along the front of the block and running to east and west. This wire was left permanent throughout the setting of the trees. The other wire was run at right angles to the stationary wire and was set running to north and south. The holes were dug at each marker on the wire by means of a post-hole auger.

When all the holes in the row were dug, the north and south wire was moved to the next marker on the east and west wire and the row of trees set.

Thus a crew of only three men was used. Two men dug the holes with augers and reset the north and south wire as necessary, while a third man set the trees in the holes and tamped them. By this method, it was possible to set the full 10 acres in a day at an actual cost of 2.4 cents per tree.—W. D. DAVIS.

ARE YOU PLANNING YOUR OWN COLD STORAGE

(Continued from page 7)

on the farm undoubtedly could not be made to justify itself. Where larger average crops are involved, the grower must figure, in addition to the rate of commercial storage, his distance from the plant and the transportation and handling charges involved. Methods of marketing the crop must also be considered. Where a large grower is so located that he can easily dispose of his output through a terminal market with good cold storage facilities, and excessive transportation and handling charges are not a bugaboo, he does not need his own storage.

The large grower, however, who disposes of his crop in smaller quantities and direct from the orchard, will find a distinct advantage in having the crop under his own storage roof, where it can be packed as sold. Every cent thus saved from transportation, remote storage and handling charges goes to swell the year's profits.

How much to invest in storage construction can also be based upon what the grower has spent in other years upon marketing costs, to say nothing of what he may have lost through low prices. Upon checking over his records, one large grower found that he had spent $37,000 in cold storage charges alone during the five seasons previous to 1934. Upon investigation he found that he could build a 30,000-bushel cold storage on his own farm for considerably less than this figure.

What type of construction is best for the grower-owned cold storage? Again location, weather factors and individual considerations enter into the question. At the beginning of this article are a number of illustrations showing farm storage plants of varying sizes and different types of construction. It is possible in certain instances to remodel an existing building and thus convert it for storage purposes. Depending largely upon the soundness of construction of the existing building, this may be practical in certain cases for air-cooled storage, although the extra cost of properly insulating an old or improperly constructed building makes this questionable from an economic standpoint.

Where one is going to invest in mechanical refrigeration it will most certainly pay to begin with a properly constructed building. Under most conditions masonry buildings are to be preferred to frame structures, as they are more likely to be tight and

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SEASONABLE FASHIONS

No. 3001—Matronly Chic. Designed for sizes 36, 38, 40, 42, 44, 46 and 48-inches bust. Size 36 requires 3¼ yards of 39-inch material with 1⅛ yards of 39-inch contrasting.

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No. 3059—Lines That Slenderize! Designed for sizes 36, 38, 40, 42, 44, 46 and 48-inches bust. Size 36 requires 4¼ yards of 39-inch material with ¼ yard of 18-inch contrasting.

Patterns may be secured by mail, postage prepaid, at 15 cents each from FASHION DEPARTMENT, AMERICAN FRUIT GROWER, 1370 Ontario St., Cleveland, Ohio. Be sure to state size required. Enclose 10 cents additional for New Spring Fashion Magazine (15 cents where no pattern is ordered).

HOME INDUSTRIES RETURN

By MARY LEE ADAMS

WITHIN the last few years there has been a noticeable revival of such arts and crafts as may be carried on in the home. Just when and where it started may be in doubt but why it took such a pronounced up-swing finds an assured answer in the **"Depression,"** that scapegoat of the lean years.

We have ground for hope that the return may be permanent, since the crying need for cash, though the chief activating agency has yet been quickened and intensified by a genuine and growing appreciation of the superior worth and charm of the homemade, handmade article.

Mechanical devices were hastened by the demand for time and labor-saving inventions. When the power loom and later the sewing machine made their bow to a dazzled world, the applause was great save among such hand weavers and sewing women as lost their jobs. The general public hailed them as a great improvement.

Today we are not so sure. The new inventions have become necessities, but when we wish for something very special, something that combines usefulness with an artistic touch, we hunt up the beautiful handwoven fabrics from away back in the hills, from the primitive neighborhoods where the spinning wheel has never ceased to hum.

In our own homes the needles are clicking in the hands of young women intent upon creating smart knitted sport clothes. Some add materially to a slender income by creating new knitted designs for large establishments and also knit sport clothes for individual orders.

When the far sequestered places awoke to the fact that there was a demand for their wares, they developed the true artizan pride in the quality of their work. Many centers of so called "Mountain Industries" flourished under benevolent management and opened the way to greater comfort and wider knowledge for hitherto cramped lives.

While visiting a lovely locality in the Blue Ridge Mountains, the extent to which the native arts and crafts are being exploited has been thrust upon my attention. Here, under the boughs of a roadside pine, the country potter has set up his wheel. About him cluster the curious. For the pleasure of the children he turns a lump of clay right before their eyes into a shapely two-inch jug capable of taking a fine glaze and, joy of joys, bearing on its side the name of the small purchaser.

Ranged for display upon the rough shelves of his roadside stands, rows of enchanting jugs, pots, vases, etc., of lovely shape and hue, send forth the gleam of varied glazes. In no line of hand work is the growth of native arts more apparent than in these beautiful potteries.

In small mountain industry shops dotted about in little towns and villages, are found most interesting examples of oldtime handmade furniture. Admirably proportioned chests, spool bedsteads, chairs, tables, all of walnut and maple, both originals and reproductions worn or rubbed smooth to a fine subdued luster.

Very original are the inlaid trays of native wood, the well-built split withe wood baskets. Most unusual of all, the woven split withe folding screens, appropriate for screening bedrooms or kitchen from the living rooms in the simple holiday house of summertime.

Homespuns of virgin wool, vegetable dyed, woven on looms operated by weavers whose far-off forbears used the same methods, are absolutely unrivalled. So with the blankets and soft scarfs all of pure wool. A friend of mine has a loom of her own and uses it to meet expenses. Another supported herself for years in comfort, traveling from city to city, selling and taking orders for hooked rugs, for which she herself made the designs and supervised the work. In many directions home industries are opening up new fields of endeavor.

Though the urgent need for cash has without doubt quickened the growth of personal enterprise, I do not believe that it is by any means always the prime factor in such efforts. The urge toward some sort of esthetic expression is normal in all human beings. In some it is irresistible. The result of such expression may be of doubtful artistic worth, as when the mountain boy goes wild on the jew's-harp, but nothing gives him quite the same thrill.

Life offers varying satisfactions to rich and poor, but to all alike there are few delights so keen as successful expression of individual capabilities. Thousands of people in both the rural and town settings have today found joy in the creation of beautiful and useful articles.

ARE YOU PLANNING YOUR OWN COLD STORAGE?

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more easily insulated. Construction of any kind should not be undertaken, however, without the benefit of advice from a cold storage expert, whether a building contractor or a representative of a reliable firm specializing in insulation materials or refrigeration machinery. Anyone of such a company will gladly furnish information and advice on construction free of charge, and in most cases will even work out plans in detail to fit the grower's needs.

If after hard thinking upon the problem of operating your fruit farm as a sound business proposition you have come to the conclusion that your own storage will prove a profitable investment, do not allow yourself to fall into the error of false economy in constructing or equipping the plant. Legitimate saving is, of course, to be encouraged, but do not skimp on the type of building materials, amount of insulation, or capacity of refrigerating compressor.

When the refrigeration engineer specifies a certain amount of insulation, the grower may consider it to be excessive and object to the necessary expenditures. Sometimes a compromise is effected, and the grower feels he has saved some money by reducing the amount of insulation. Afterwards it may *appear* that he has, as he may be able to operate his storage at the specified temperature. The truth may be that he is spending the money he saved on insulation on operating costs, as the increased heat losses through the substandard insulation make necessary longer hours of operation with increased power expenses and added wear on the machinery. What appears at first to be a saving may in the end prove a costly expenditure.

Insulating materials are now available in a variety of forms, and a satisfactory material may be had for almost any building situation that might arise. Some of them possess a certain amount of structural strength, while others do not contribute in this way to the building. These materials may be classified according to the form in which they are furnished and used, as follows: (1) rigid or board type; (2) semi-flexible; (3) soft flexible or blanket forms; (4) dry fill; (5) wet fill; (6) miscellaneous. An efficient insulating material should possess the following qualities: (1) a high thermal or insulating value; (2) non-absorption of moisture; (3) fire resistance; (4) vermin or rodent

proof; (5) odorless; (6) ease of handling; (7) not deteriorating readily; (8) light weight, and (9) possibility of thorough sealing against penetration of air.

Selection of a proper type of insulation is extremely important and instances can be cited where failure to use a material meeting these specifications proved costly. A single rat, for instance, has been known to ruin more than $50.00 worth of apples before he could be killed. A waterproofing material imparted a disagreeable taste to stored products for two seasons before the odor wasted away.

As Clarence E. Baker of Purdue Experiment Station points out, from studies he has made, types of refrigeration machinery vary from the more or less antiquated direct expansion or circulating system to the modern air-conditioned plant where the temperature and relative humidity are thermostatically controlled. The air-conditioned system is so much more efficient than other types that most really modern storage plants are equipped with it in one form or another, even though in first cost it is the most expensive. Such a system may consist of a central air conditioning unit in which the air used in the entire plant is cooled and humidified, and circulated through ducts to the different rooms, or a small individual unit used in each room.

Do not make the costly mistake of installing too small a compressor. The refrigeration engineer figures the heat losses through the building under consideration, calculates the refrigeration load of the product to be stored, adds a safety factor and determines the size of the compressor necessary to meet these demands. Again a compromise is sometimes made with a grower who feels that he must save a few hundred dollars by buying a smaller machine. Here again the economy may prove to be a false one. A large or oversized machine that will carry the peak load easily and the ordinary load on short hours of operation will operate more efficiently, and should give many years of trouble-free service. Future additions to the plant may even be made without providing additional machinery. An undersized machine, on the other hand, besides furnishing questionable storage conditions, will necessarily operate for longer hours, increasing operating expenses somewhat, but, much more serious, a costly breakdown may result after a few years from the constant overload of the machinery.

Fruit growing is a business, and the more the grower can control every operation on a business basis, much

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FIRE BLIGHT CONTROL

(Continued from page 12)

to canker control will depend on finding a penetrating substance which will kill the bacteria and be relatively non-injurious to living bark tissue. A method based on this principle would not only increase the rate at which the work could be carried on, but would require somewhat less skill than the surgical method. More branches could be saved, thus preserving bearing wood and maintaining the normal shape of the tree.

In recent years, Day has introduced in California a solution of zinc chloride for treating pear cankers, which is now in wide use in that State. Some growers have obtained satisfactory results over a period of at least eight years. Others report instances of poor control or of injury, the latter in some cases being traced to the use of too concentrated solutions. The zinc chloride solution is commonly painted over the canker surface and for some distance beyond the margins. Favorable reports of its use on a limited experimental scale on apple cankers have come from Tennessee and Ohio. In New York, zinc chloride, cadmium sulphate and cobalt nitrate solutions have been tested on apple and pear, but the method as yet has not been developed sufficiently to warrant its use on a commercial scale. However, encouraging results have been secured, especially from the use of cadmium sulphate.

The use of an acetylene or gasoline torch in canker control has been tested on a limited scale in New York during the past three seasons with promising results. As yet no recommendations can be made.

It is recommended that growers make as thorough a clean-up as possible during the winter, thus reducing the sources of inoculum to a minimum. This should include not only cankers within the orchard and neighboring orchards, but also all susceptible trees in dooryards and along fence rows. As mentioned above, this must of course be followed by frequent and careful inspections during the growing season.

Finally it should be emphasized that at present there is no adequate control measure for severe outbreaks of fire blight after the infections have appeared. With the blight prevalent throughout a tree, it is evident that it is then too late to do much about it. The development of a commercial orchard is a long time proposition and no fruit grower can afford to gamble with a fire blight epidemic.

In recent years emphasis on blight

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FOR LONGER AND BETTER PROTECTION AGAINST CODLING MOTH

HERE'S THE TRUTH ABOUT THE KILLING POWER OF S-W ARSENATE OF LEAD

● Sherwin-Williams Arsenate of Lead does not contain any cheap ingredient or astringent. It is just 98 per cent pure Arsenate of Lead possessing physical properties that insure a high deposit uniformly distributed as a blotchy covering on your apples. Facts based on scientific research are what you want. These two apples selected at random and sprayed under identical laboratory conditions tell their own story.

LAB. NO. 1431

This apple was given four sprays of Sherwin-Williams Arsenate of Lead—3 pounds to 100 gallons of water. Total deposit 143 micrograms of unadulterated arsenic oxide per square inch . . . *just 50% more killing power to the square inch than its sister apple, sprayed under identical conditions, but using Arsenate of Lead containing an astringent.* S-W Arsenate of Lead contains no deflocculator or astringent, insuring the maximum possible deposit and high toxicity.

LAB. NO. 1432

This apple, identical in every respect to the one used in test 1431, was sprayed with an astringent type of Arsenate of Lead stated to contain 93% active ingredients and an alum content of 2¼% to 3%. Total deposit under identical spraying conditions yielded only 99 micrograms of arsenic oxide per square inch.

Codling Moth Control Service Is Yours — FREE!

This new practical plan tells you how and when to spray, offers definite helpful information on trapping codling moths, and banding trees to catch the worms. This service is yours without charge . . . Write *Insecticide Department,* THE SHERWIN-WILLIAMS CO., 101 Prospect Avenue, CLEVELAND, Ohio.

There is no substitute for KILLING POWER when Codling Moth attacks. And only a hard-hitting, two-fisted Arsenate of Lead can stop codling moth larvae. Before you experiment, remember—it costs no more to use S-W Arsenate of Lead. It costs no more to have its 50% increased deposit unhindered by deflocculators or astringents.

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use the new DRY LIME SULFUR

MULSOID SULFUR schedule

THE SHERWIN-WILLIAMS *New*

1935 APPLE SPRAYING SCHEDULE

SAN JOSÉ SCALE		
SCAB	DELAYED DORMANT	12 to 15 lbs. Dry Lime Sulfur
SCAB	CLUSTER-BUD OR PINK	3 lbs. Dry Lime Sulfur
SCAB	CALYX	1 lb. Dry Lime Sulfur, 2 lbs. Mulsoid Sulfur and 2 lbs. Hydrated Lime
SCAB	ONE WEEK AFTER CALYX	1 lb. Dry Lime Sulfur, 2 lbs. Mulsoid Sulfur and 2 lbs. Hydrated Lime
SCAB	TEN DAYS AFTER CALYX	1 lb. Dry Lime Sulfur, 2 lbs. Mulsoid Sulfur and 2 lbs. Hydrated Lime
SCAB	TWO WEEKS AFTER CALYX	1 lb. Dry Lime Sulfur, 2 lbs. Mulsoid Sulfur and 2 lbs. Hydrated Lime
SCAB	FOUR WEEKS AFTER CALYX	2 lbs. Mulsoid Sulfur and 2 lbs. Hydrated Lime

THESE DILUTIONS ARE PER FIFTY GALLONS OF WATER

For the control of codling moth, add 1½ pounds of Sherwin-Williams arsenate of lead to each 50 gallons of spray

WILLIAMS MATERIALS

BLACK RASPBERRIES PROVE PROFITABLE

(Continued from page 9)

jurious raspberry pests. The practice of removing the old fruiting canes immediately after harvest was particularly important.

A production of 50 gallons of raspberries on one-eighth of an acre the second year after planting is worth serious consideration, especially when these may be sold at $1 per gallon, giving a total return of $50. Such a crop may be produced in any section of the country where black raspberries can be grown profitably. A crop yield of 187½ gallons sold at 75 cents per gallon, giving a return of $140 the third year after planting and on which there was a labor cost of only $15 for harvesting has even greater significance. This raspberry patch under its present culture should be profitable for the next five to seven years.

It must be stated that the raspberry patch and its culture is only a side-line for this grower. He continues to operate his 80-acre farm, but he frankly admits that the one-eighth-acre of berries has given him a greater cash income than any other project on the farm.

Perhaps there is an opportunity in nearly every community for a few raspberry producers to grow profitable crops. For those interested the returns made furnish food for thought. Although larger yields are sometimes reported, these yields are large enough to be a goal which good growers may strive to attain.

Pruning Aids Codling Moth Control

THERE is no one thing which will completely control codling moth, but a great many practices which *help* to do it. One of the most important of these, outside of regular spraying activities, is pruning.

Proper pruning as an aid for codling moth control should do five things:

1. Open up the tree sufficiently to allow spray material to be driven through the tree from the outside and from the inside.

2. Make openings (three or four in a large tree) through which the "ground man" can reach the trunk and spray the fruit and branches from the inside.

3. Remove low-hanging branches reaching within a foot of the ground, on which the apples are usually below grade in size and color and cannot be hit by the spray from one side.

4. Lower the height of large trees within easy reach of the average spray streams, and

5. Remove all broken and split branches, decayed stubs, knotholes, and other hibernating places where over-wintering worms are usually found in large numbers.

SHALL I KEEP BEES OR HIRE THEM?

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will store as much as 150 pounds. In fact, unless the locality is exceptionally good for honey—which orchard country rarely is—an average of 40 or 50 pounds per colony year in and year out is good even for a professional beekeeper.

The second common error is to take the retail selling price of a pound of honey—normally around 20 to 25 cents—and multiply the number of pounds by it, considering that as the value of the crop. The truth is that the actual value of honey, as of other farm produce, is about one-third the retail selling price. In other words, the producer gets from 30 to 35 cents of the consumer's dollar. Economists have been trying for years to increase this, but so far without noticeable success. The orchardist knows that this principle holds in regard to fruit; but for some unknown reason honey is considered an exception.

All of which means that if you have the money to buy them, are sufficiently interested to take care of them, and sufficiently calloused to stings to be able to handle them in a practical manner, you may consider buying bees for your orchard.

There is one other point, however, that should be mentioned. It is understood that trees must not be sprayed while bees are working on the bloom. When hiring bees this is easily managed; they are moved in and out again between sprays. If they are your own bees, kept in or near the orchard throughout the year, it is necessary that any dandelion, clover or other ground blooms upon which they might work be cut or harrowed under before poison spray is applied. Otherwise your whole field force of bees may be wiped out.

In hiring bees for your orchard, there is, to mention the saddest feature first, the amount you must pay for their services. As this is a lump sum in hard cash it is apt to hurt more than it would if spread over a longer period. But if the amount is actually less than it would cost to keep your own bees for this purpose, then it pays to consider it, even though you might be able to take care of the bees yourself. Renting bees for orchard work is a comparatively new business, with rates not yet established. Prices paid range from $5 per colony down to as low as $1.50. The lower rate is undoubtedly too low for the beekeeper, and the higher rate has, during the last few

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SHALL I KEEP BEES OR HIRE THEM?

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years, been too high for the orchardist. Although moving bees is routine work for a beekeeper, it is nevertheless hard work, much of which has to be done at night and under a heavy nervous strain.

Authorities advise one colony of bees per acre of orchard for best results, but this will depend somewhat on the amount of bloom, and even more upon the variety. Wherever there are large blocks requiring cross-pollination it is, of course, necessary to provide bloom of the proper kind for this purpose. The usual method is to place the bouquets in pails or fruit jars, with water to keep them fresh, and hang these in the branches of trees requiring cross-pollination.

When several orchards are under one management, the hired bees can be placed wherever they will do the most good. Frequently they are moved from one orchard to another with good results.

A good beekeeper will see that the bees are securely shut in before they are moved. That is the rule. Still, it is difficult to pile 50 or 60 hives of bees, many of them heavy with brood and honey, onto a truck and trundle them over the road for an hour or two without having an opening occur somewhere large enough to let a bee out. There are apt to be some loose bees by the time the load arrives; sometimes, even with the best of care, there are a great many. A rough road is especially bad.

For the benefit of those who are timid about bees, bear in mind that these bees which have crawled out are not particularly vicious. They generally cluster on the screen, and if a little smoke is used the hive can be unloaded and placed with no trouble. When the hive has been placed in position and the entrance opened, however, it is another story. Bees that have been confined are apt to be in vicious mood when released. They dash out and strike at anything within range. It is common practice to open the hives as soon as they are unloaded, but the men should be allowed to get out of range—100 feet away, at least—before this is done. The beekeeper generally sees to this.

It is also well to keep away from newly moved bees during the first few hours, or if there is work that must be done near the hives, let the men who do it wear veils. The face and head are the bees' favorite targets. After they get to work on the bloom their temper improves. When the flowers are yielding nectar the bees pay scant heed to anything else.

Occasionally a man gets stung from bees in the orchard, but no more often than he might be stung by a hornet or bumble bee. Those who are afraid of bees can wear gloves and veils, which some of them keep from year to year for this purpose. Placing bees in the orchard and working around them becomes merely a part of the year's work.

The use of protection when the occasion demands it is an important point which orchardists should remember, since the nature of their business demands bee service and brings them into contact with bees. Professional beekeepers wear veils—and gloves, too, when they need them—and there is no reason why the orchard worker should not do the same. The benefits are invariably worth more than the trouble involved.

Lief Verner, staff horticulturist at the university experiment farm, Kerneysville, has resigned to become head of the Department of Horticulture at Idaho State University, Moscow. Mr. Verner came to West Virginia several years ago from Idaho.

His place at West Virginia is being filled by Dr. L. R. Batjer from Cornell University.

FIRE BLIGHT CONTROL

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control is being shifted from eradication to prevention. Spraying during bloom with Bordeaux mixture, 1-3-50, to prevent blossom infection is a step in this direction and has yielded promising results in various sections of the country. Unfortunately, too little is known at present about the whole question of spraying in bloom with bactericides to make general recommendations. However, the application of a weak Bordeaux mixture at full bloom, or at early bloom and again at full bloom, has rather consistently reduced blossom infection wherever tried with no significant spray injury to the trees.

A number of questions have been raised by the application of bactericides to open flowers, viz., (1) the influence of spraying or dusting in full bloom on the setting of fruit; (2) the possible injury to fruit and foliage from the use of copper-containing materials; and (3) the effect of such materials on the health of honeybees and other pollinating insects. Some progress has been made toward the answering of these questions.

Much more research is needed on the whole problem of fire blight prevention, and should eventually provide us with spray or dust applications which may be included in the regular spray schedules to effectively prevent blossom infection and blight epidemics. Another possibility would be the development of highly resistant or blight-proof varieties.

COLD STORAGE

(Continued from page 22)

as the making of automobiles is kept under expert control by the "production line" method of manufacturing, the more he stands a chance to make a profit. When crop capacity, marketing conditions and capital warrant it, an investment in a cold storage plant makes the grower just that much more General Manager of his business, and less at the mercy of the middleman who seeks to control his market. Cold storage makes the grower independent of harvest season prices and enables him to market winter varieties of fruits over a six months' period and at premium prices. It makes it possible for the grower to provide local markets and truckers with a continuous supply throughout the season, often f.o.b. the farm. Cold storage also makes it possible for grading and packing to be done, as sales are made during the winter and spring, according to the specifications of individual buyers or markets.

"EVERY GROWER'S" PAGE

By T. J. TALBERT

IN establishing an orchard or other fruit planting the direction of the slope may in some instances be important, but being greatly influenced by local conditions and the kind of fruits to be grown, definite rules cannot be given for the selection of a slope. South and southwest slopes are generally warmest and accelerate growth in the spring. North and northwest slopes retard early growth and development. Where there is danger, therefore, from late spring freezes and frosts it may be well to avoid plantings on south and southeast slopes. This applies especially to early blooming fruits like the apricot, almond, sweet cherry and Japanese plum.

When the producer desires fruits like the strawberry for an early market, he may find that the south and southeast slopes are preferable because of their promotion of earlier growth. Also by planting both the north and south slopes, the harvesting period may often be prolonged to advantage. Due to less weathering and erosion, the soil on the north slopes is usually deeper and more fertile than that on the south. There is also more danger from sunscald on south and southwest slopes, and attacks from borers and cankers may be more severe.

If the locality is subject to strong winds from one or more directions, from the northwest or the southwest for example, it may be advisable to select other slopes. In considering the aspect, or slope, however, too much emphasis should not be given one particular slope. A fruit planting located on suitable soil, under conditions favoring growth and good fruiting may yield profitable returns no matter what the direction of the slope.

Pollinizers for Stayman and Willow Twig

Please give me the names of several varieties of apples which would pollinize Staymans and Willow Twigs. I have about 100 of each planted side by side and Jonathans next to them. I think the six rows of Jonathans bloom too early and the Staymans and Willow Twigs do not pollinize each other or themselves. Is that true? My trees are about 10 years old.—B. G. W., Illinois.

THE description which you give of your orchard and the plantings leads us to believe that your pollination problem may be already solved, as the Jonathan generally proves to be a good pollinizer for the Stayman and Willow Twig.

Should you desire other varieties, however, for your planting to insure better facilities for cross-pollination, the following are suggested: Delicious (Starking or Richared), Golden Delicious, Grimes, or Gano.

It is true, the Stayman may not prove to be a very effective pollinizer for Willow Twig but Willow Twig has in most instances been found satisfactory as a pollinizer for Stayman.

When to Prune Grape Vines

What time of the year is best to trim and prune grape vines?—K.J.T., Michigan.

IN general, the most satisfactory period, all factors considered, for the pruning of grape vines is in early spring after all danger from excessive low temperatures has passed. This is true because the work if delayed until this period will enable the pruner to remove any wood that may have been killed by winter temperatures, and the canes which are selected and left for fruiting should be the healthiest and most suitable ones. If the pruning work is done at this period little or no bleeding will result and even if it did perhaps it would not be harmful.

Filling Vacancies in Orchard

I am seeking your council on a small home planting. I desire to plant trees to fill the vacancies in a small orchard of scattered sturdy old apple trees located in a heavy growth of blue grass. These trees, by the way, did not bear last year. As the orchard space is so limited, I should be very glad to have suggestions in selecting the varieties of highest quality to plant. —W.E.N., Indiana.

AN application of about five pounds of nitrate of soda or sulphate of ammonia two weeks before blooming time to the soil under the spread of branches of the old apple trees which you describe should be very helpful in securing a set of fruit. Cyanamid may be used instead of one of the other fertilizers, but it should be applied about six weeks before blooming time. These fertilizers are spread broadcast by hand on top of the ground under the spread of the farthest branches and slightly beyond.

For apple varieties Jonathan, Stayman, Grimes and Delicious should be entirely satisfactory. Instead of planting Delicious, however, it is suggested that you plant one of the red sports, Starking or Richared. Some of the new varieties of apples and other fruits from the New York State Fruit Testing Association may also prove very profitable and worth while under your conditions.

A planting distance of about 35 feet each way should be about right for apples and a distance of 25 feet should be satisfactory for peaches, cherries, pears and plums, particularly for a small home orchard or where the space is limited.

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